



(19)

Europäisches Patentamt
European Patent Office
Office européen des brevets



(11)

EP 0 809 999 A3

(12)

EUROPEAN PATENT APPLICATION

(88) Date of publication A3:
24.11.1999 Bulletin 1999/47

(51) Int Cl. 6: A61L 33/00

(43) Date of publication A2:
03.12.1997 Bulletin 1997/49

(21) Application number: 97303618.9

(22) Date of filing: 28.05.1997

(84) Designated Contracting States:
AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC
NL SE

Designated Extension States:
SI

(30) Priority: 29.05.1996 US 654948

(71) Applicant: ETHICON, INC.
Somerville, N J 08876 (US)

(72) Inventor: Lunn, Anthony C.
Princeton, New Jersey 08540 (US)

(74) Representative: Fisher, Adrian John
CARPMAELS & RANSFORD
43 Bloomsbury Square
London WC1A 2RA (GB)

(54) Method of varying amounts of heparin coated on a medical device to control treatment thereon

(57) The present invention addresses two previously unresolved problems simultaneously. First, the question concerning the amount of heparin applied to a stent is resolved. That is, the invention set forth herein will demonstrate that by varying the amount of heparin, the practitioner can actually more adequately determine whether in fact the patient will receive the correct dosage to address the problem, and at the right time in which to address the problem. Second, the problem of applying the heparin coating to a stent is addressed. There, specifically, the invention turns to the fashion in

which to apply multiple layers of heparin coating to the stent, and to thereby variably adjust the dosage applied to the patient at the lesion site. The present invention does so by providing a method and device for coating a stent with multiple layers of heparin coating. By so doing, the heparin coating is absorbed by the body in a degree which varies with the amount of heparin applied. Thus, contrary to formerly popular belief, the present method allows for the significant adjustment of heparin therapy. And, the stent so coated allows for the variable application of such heparin therapy at the lesion site.

EP 0 809 999 A3



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 97 30 3618

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.)
X	EP 0 604 022 A (ADVANCED CARDIOVASCULAR SYSTEM) 29 June 1994 (1994-06-29) * claims *	1-10	A61L33/00
X	WO 93 06792 A (SCIMED LIFE SYSTEMS INC) 15 April 1993 (1993-04-15) * claims *	1,3,4,6, 8,9	
A	WO 91 12779 A (MEDTRONIC INC) 5 September 1991 (1991-09-05) * claims *	1-10	
A	EP 0 623 354 A (MEDTRONIC INC) 9 November 1994 (1994-11-09) * examples *	1-10	
A	TAO P ET AL: "Role of polymers in improving the results of stenting in coronary arteries" BIOMATERIALS, vol. 17, no. 7, 1 January 1996 (1996-01-01), page 685-694 XP004032760 ISSN: 0142-9612	1-10	TECHNICAL FIELDS SEARCHED (Int.Cl.)
A	EP 0 566 245 A (MEDTRONIC, INC) 20 October 1993 (1993-10-20) * page 20-10-93; claims *	1	A61L A61F
P,X	WO 97 10011 A (SCHNEIDER USA INC) 20 March 1997 (1997-03-20) * claims *	1-10	
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
THE HAGUE		4 October 1999	ESPINOSA, M
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background C : non-written disclosure P : intermediate document			
T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.

EP 97 30 3618

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
 The members are as contained in the European Patent Office EDP file on
 The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

04-10-1999

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
EP 0604022	A	29-06-1994	CA	2111455 A	23-06-1994
			JP	6218063 A	09-08-1994
WO 9306792	A	15-04-1993	US	5464450 A	07-11-1995
			US	5551954 A	03-09-1996
			US	5500013 A	19-03-1996
			US	5769883 A	23-06-1998
WO 9112779	A	05-09-1991	CA	2049973 A	29-08-1991
			DE	69110787 D	03-08-1995
			DE	69110787 T	04-04-1996
			EP	0470246 A	12-02-1992
			JP	5502179 T	22-04-1993
			US	5545208 A	13-08-1996
			US	5871535 A	16-02-1999
			US	5851217 A	22-12-1998
			US	5725567 A	10-03-1998
			US	5851231 A	22-12-1998
EP 0623354	A	09-11-1994	US	5464650 A	07-11-1995
			JP	8033718 A	06-02-1996
			US	5837008 A	17-11-1998
			US	5679400 A	21-10-1997
			US	5624411 A	29-04-1997
			US	5776184 A	07-07-1998
			US	5824048 A	20-10-1998
EP 566245	A	20-10-1993	JP	6007455 A	18-01-1994
			US	5571166 A	05-11-1996
			US	5599352 A	04-02-1997
			US	5591224 A	07-01-1997
			US	5510077 A	23-04-1996
			US	5554182 A	10-09-1996
			US	5591227 A	07-01-1997
			US	5800507 A	01-09-1998
			US	5697967 A	16-12-1997
			US	5628785 A	13-05-1997
			US	5849034 A	15-12-1998
WO 9710011	A	20-03-1997	US	5837313 A	17-11-1998
			AU	703805 B	01-04-1999
			AU	6965296 A	01-04-1997
			BR	9610607 A	04-05-1999
			JP	11500047 T	06-01-1999
			NO	981066 A	08-05-1998

EPO FORM P0550
For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

THIS PAGE BLANK (USPTO)